The authors have thus rendered a signal service to the cause of anthropology, nor must we overlook the liberality of the Royal Society of Victoria for undertaking the expensive work of publishing these elaborate records. It is especially pleasing to note that a strong school of physical anthropology is springing up in Melbourne, one that is keenly alive to the necessity of studying the native races as they now are, and of securing permanent records of their physical characters.

The publication under review may be described as a craniological monograph of a new type; there is practically no letterpress, no columns of measurements, merely tracings from which measurements may be estimated. In brief, the authors have made a large addition to Tasmanian records, but added nothing to the story of this extinct native race. Very likely they intend to give their interpretations of these tracings when they come to deal with their investigations of the Australian natives. Still, we are of opinion that the scientific value of the present publication would have been greatly enhanced if the authors had included the results of the elaborate study they have made of this new collection of Tasmanian crania.

PHILOSOPHY.

(1) *Wolffsche Begriffsbestimmungen. Ein Hilfsbüchlein beim Studium Kants.* By Prof. Julius Baumann. Pp. iv+56. Price 1 mark.

(2) *Wilhelm von Humboldts ausgewählte philosophische Schriften.* Herausgegeben von Johannes Schubert. Pp. xxxix+222. Price 3.40 marks.

(3) *Fichte, Schleiermacher, Steffens über das Wesen der Universität.* By Eduard Spranger. Pp. xlii+291. Price 4 marks.

(4) *Baruch de Spinoza. Ethik. Siebente Auflage.* By Otto Baensch. Pp. xxxii+315. Price 3.40 marks.

(5) *Encyklopädie der Philosophie.* By A. Dorner. Pp. vii+334. Price 6 marks.

(Leipzig: Verlag der Dürr'schen Buchhandlung, 1910.)

(1) A COMPILATION of Christian Wolff's definitions, by the professor of philosophy at Göttingen. Dr. Baumann made this compilation many years ago, for his own needs, purposely confining himself to the problem of the theory of knowledge. Recently, when re-reading Kant's "Kritik der reinen Vernunft," he took up his compilation and recognised the parallelism with Wolff. This little book is therefore now published as a help to the study of Kant. It contains useful definitions, with references, of terms such as *Empfindung, Vorstellung, Wahrnehmung, Idee, Begriff,* which are the chief elementary difficulties in the way of the student of Kant, and of German philosophical writers in general.

(2) This selection of Humboldt's philosophical writings is intended to spread the knowledge of his many-sided nature and powers among a wider circle of readers than has hitherto been reached. Those who wish to go more deeply into his treatment of the subjects may be referred to the great standard edition of his works, which appeared during the course of last year. The present volume contains chosen specimens on such diverse subjects as Goethe's "Hermann and Dorothea," "Latium and Hellas, or Considerations on Classical Antiquity," "Philosophy of Language," "Philosophy of Religion," the "Bhagavad-Gîtâ," and "Pedagogy." The matter seems, naturally, a little old-fashioned, and the æsthetical parts appeal chiefly to readers who make a special study of the history of German literature. Humboldt was a humanistic philosopher, leaving behind him the individualism and general æsthetic hurly-burly of the "Sturm and Drang" period.

(3) Another book of chiefly historical interest, consisting of reprints of various writings of the three authors named, concerning ideals of university teaching. The centenary of the University of Berlin, which was recently celebrated, gives the suitable occasion. Dr. Spranger furnishes an introduction in which he compares Berlin with other universities. The former

> "was born in an hour of great changes: this birth in the living flux of things, permeated with the thoroughly modern spirit, gave her living power, and made her a model to her older sisters, who are but now stripping off the old forms, and growing into the new."

(4) In his "Biographical History of Philosophy," G. H. Lewes said that he never hoped to find foothold in the boundless morass of metaphysics, after he once fairly saw the reasons which rendered Spinozism unacceptable. The present edition of the famous "Ethics" (the seventh in German translation from the original Latin) seems to indicate that there are readers still to be found for the writings of the subtle-minded though intensely spiritual Jew, to whom—as justifiably as in the case of Novalis—the term "God-intoxicated" has been applied. The translator writes an introduction, in which he remarks that "Spinoza's philosophy is the most impressive concentration of the thought of the seventeenth century into a coherent view of the world and of life," even though those times produced Descartes and Leibniz. And modern philosophy, for the most part, will certainly agree.

(5) Dr. Dorner, who is professor of theology at Königsberg, is a follower of Hegel rather than of the great analyst whose name is inevitably recalled by Königsberg. The present volume, which is not an encyclopædia in the English sense, is a metaphysical work dealing chiefly with the theory of knowledge and doctrine of categories. The following sketch will give the author's general attitude.

The progress of philosophy seems the same now as in antiquity. Kant occupies the same position in modern philosophy as Socrates did in the ancient. After Socrates came Plato and Aristotle, to whose systems our modern philosophy of the Absolute corresponds. Then came the Stoics and Epicureans, with a revulsion to the practical side of things. The modern analogue is found in those thinkers who lay emphasis on feeling and will. The chief difference between old and new is, that the subjective side is now much more in the foreground, which tendency shows itself particularly in the importance assigned to psychology. Some, indeed, candidly regard it as the central science. Also, in modern life the empirical

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sciences, and history, play a much greater part than in antiquity. Result: mysticism and agnosticism. Prof. Dorner combats both. The physical sciences themselves point the way to metaphysical principles; the problem of philosophy is not merely epistemology or the making of a world-conception out of the disparate elements of knowledge and experience, but is rather the search for a unified metaphysic by which the fundamentals of the world and of the spiritual life may equally be grounded in an Absolute Being.

AMERICAN TEXT-BOOKS OF MATHEMATICS.

(1) *College Algebra.* By Prof. H. L. Reitz and A. R. Crathorne. Pp. xiii+261. (New York: H. Holt and Co.; London: G. Bell and Sons, 1909.) Price 6*s.*

(2) *Trigonometry.* By Prof. A. G. Hall and F. G. Frink. Pp. x+146+93. (New York: H. Holt and Co.; London: G. Bell and Sons, 1909.) Price 7*s.* 6*d.*

(3) *First Course in Calculus.* By Prof. E. J. Townsend and Prof. G. A. Goodenough. Pp. xii+466. (New York: H. Holt and Co.; London: G. Bell and Sons, 1908.) Price 12*s.*

THESE books are the first three of a series which is intended in the first place for students taking a university course in engineering, and also, to a certain extent, for mathematical students. It will be noticed that each book has two authors, who have been selected to represent the interests of readers of both classes.

(1) and (2). The chief novelty in these books is to be found in the variety of examples, selected from very different subjects. Thus, as an example on evaluating algebraic expressions ("Algebra," p. 24), the student is asked to verify in a few cases a formula for the day of the week, which (after an obvious simplification) can be written[1]—

$$2+p+2q+[\tfrac{3}{5}(q+1)]+s+[\tfrac{1}{4}s]-2r+[\tfrac{1}{4}r]\equiv t \pmod{7}$$

where t is the day of the week (Sunday being 1 and Saturday 7), and the date is the pth day of the qth month in the year $100r+s$. The reader interested in such matters may find it instructive to reconstruct this formula, of which the most interesting feature is the part depending on q; it will be found that starting from March (and ignoring February) the lengths of the months recur after intervals of five months, and this is the basis of the formula.

The problems proposed in the trigonometry are chosen so as to illustrate the practical difficulties of surveying so far as possible. Great stress is laid on the advantage of making a *form* for numerical calculations, before starting to use the tables at all. One useful consequence is that, in the typical examples worked out, the logarithms to be added are placed in *vertical* columns, as would be done in practical work; writers of text-books are very apt (in order to save space) to arrange such logarithms *horizontally*. The result is that imitative readers are liable to arrange their work in the same way, with disastrous results.

The last ninety-three pages in the trigonometry contain a good set of five-figure tables. The table of logarithmic functions, however, makes no special provision for finding the log sin and log tan of *small* angles; a very simple rule applies to four-figure or five-figure tables (with a difference of 1′ in angle), namely—

$$\log\sin\theta=\log\sin\alpha+(\log\theta-\log\alpha)$$

and this (or some similar rule) ought to be given in all tables which do not provide a special table for the first few degrees. The table of squares is interesting, as it gives the *exact* squares from 1 to 1000^2, without occupying more space than an ordinary four-figure table; this is effected by following the arrangement of Crelle's multiplication tables, where every number in the same horizontal line is terminated by the same two digits. Both in the algebra and trigonometry certain of the best-known power-series are given and used for numerical calculations; but the authors of the algebra are content to refer to the calculus (No. 3) for proofs, while in the trigonometry some proofs are provided, which would not be accepted nowadays. It might be better definitely to cut out all such proofs from books on trigonometry; in modern teaching the elements of the calculus are couainly regarded as easier (and more generally useful) than the "calculus-dodging" of the old-fashioned books.

(3) Compared with recent English books having similar titles this book contains fuller treatment of the applications of the calculus to applied mathematics; for instance, centroids, moments of inertia, resultant fluid pressure, are considered at some length, as exercises on integration.

As in the other books of the series, a large variety of illustrative examples will be found; thus the exponential function is connected with the chemical problem of inversion of cane-sugar. The theory of maxima is illustrated by the efficiency of a rough screw, the speed of signalling in a cable, and the h.p. transmitted by a hemp-rope.

In dealing with the Taylor's series derived from a given function, care is taken to point out that the series *may* converge without being equal to the function; this is a point quite commonly overlooked in the theory, and possibly an example would have helped to emphasise it.[1]

As might be anticipated from the character of the series, a good deal of stress is laid on methods for approximate integration, such as Simpson's rules and other similar methods, and several examples are given of their application to irregular solids such as rails. It seems strange, however, that the *exact* form of Simpson's rule is not mentioned, for finding the volume and centroid of a railway embankment (or the slice of an ellipsoid) in terms of the areas of the ends and the area of the central section.

The use of infinite series for finding an integral

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[1] The notation is that of the theory of numbers: that is, $[x]$ denotes the integral part of x, and $y\equiv z$ means that $y-z$ is divisible by 7. Note that January and February are regarded as belonging to the *previous* year, with the values $q=13, 14$.

[1] Thus, Pringsheim's function $\Sigma\dfrac{(-1)^n a^n}{n!(1+x^2a^{2n})}$ has the Taylor's series $e^{-a}-x^2e^{-a^3}+x^4e^{\ a^5}\ldots$: but if $a>1$, although both series converge for all *real* values of x, they are unequal except for $x=0$. For instance, if $a=2$, $x=2$, it will be found that the first series is less than 0·109, while the second is greater than 0·133; on the other hand if $a=\frac{1}{2}$, $x=\frac{1}{2}$, both series are equal to 0·434 (nearly).

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